

SEQUENCE LISTING

<110> SEKISUI CHEMICAL CO., LTD.
MARINE BIOTECHNOLOGY INSTITUTE CO., LTD.
IDENO, Akira
MARUYAMA, Tadashi
FURUTANI, Masahiro

<120> EXPRESSION VECTOR, HOST, FUSED PROTEIN, PROCESS FOR PRODUCING
FUSED PROTEIN AND PROCESS FOR PRODUCING PROTEIN

<130> Q83564

<150> PCT/JP2003/008020
<151> 2003-06-25

<150> JP 2002-185020
<151> 2002-06-25

<160> 30

<170> PatentIn version 3.3

<210> 1
<211> 257
<212> PRT
<213> Pyrococcus horikoshii

<400> 1

Met Lys Val Glu Arg Gly Asp Val Ile Arg Leu His Tyr Thr Gly Arg
1 5 10 15

Val Lys Glu Thr Gly Gln Ile Phe Asp Thr Thr Tyr Glu Glu Val Ala
20 25 30

Lys Glu Ala Gly Ile Tyr Asn Pro Lys Gly Ile Tyr Gly Pro Val Pro
35 40 45

Ile Ile Val Gly Ala Gly His Val Ile Ser Gly Leu Asp Lys Arg Leu
50 55 60

Val Gly Leu Glu Val Gly Lys Lys Tyr Thr Leu Glu Val Pro Pro Glu
65 70 75 80

Glu Gly Phe Gly Leu Arg Asp Pro Lys Leu Ile Lys Val Phe Thr Met
85 90 95

Gly Gln Phe Arg Lys Gln Gly Ile Val Pro Phe Pro Gly Leu Glu Val
100 105 110

Glu Val Thr Thr Asp Asn Gly Arg Lys Met Lys Gly Arg Val Ile Thr
115 120 125

Val Ser Gly Gly Arg Val Arg Val Asp Phe Asn His Pro Leu Ala Gly
130 135 140

Lys Thr Leu Ile Tyr Glu Val Glu Ile Val Glu Lys Ile Glu Asp Pro
145 150 155 160

Ile Glu Lys Ile Lys Ala Leu Ile Glu Leu Arg Leu Pro Met Ile Asp
165 170 175

Arg Asp Lys Val Ile Ile Glu Val Gly Glu Lys Asp Val Lys Val Asn
180 185 190

Phe Gly Glu Gln Asp Val Asp Pro Lys Thr Leu Ile Leu Gly Glu Ile
195 200 205

Leu Leu Glu Ser Asp Ile Lys Phe Leu Gly Tyr Glu Lys Val Glu Phe
210 215 220

Lys Pro Ser Val Glu Glu Leu Leu Arg Pro Lys Gln Glu Glu Pro Val
225 230 235 240

Glu Glu Glu Lys Lys Glu Glu Gln Glu Glu Ser Glu Glu Ala Gln Ser
245 250 255

Ser

<210> 2
<211> 157
<212> PRT
<213> Methanococcus jannaschii

<400> 2

Leu Ile Asn Leu Ile Lys Lys Gly Asp Tyr Val Lys Val Asp Tyr Ile
1 5 10 15

Leu Glu Val Asp Gly Lys Val Ile Asp Thr Ser Ile Glu Glu Val Ala
20 25 30

Lys Glu Asn Lys Ile Tyr Tyr Pro Glu Arg Glu Tyr Glu Pro Ile Gly
35 40 45

Phe Ile Val Gly Asn Gly Glu Leu Ile Glu Gly Phe Glu Glu Ala Val
50 55 60

Ile Gly Met Glu Val Gly Glu Glu Lys Thr Val Thr Ile Pro Pro Glu
65 70 75 80

Lys Gly Tyr Gly Leu Arg Asp Glu Arg Leu Ile Gln Glu Ile Pro Lys
85 90 95

Glu Met Phe Ala Asp Ala Asp Phe Glu Pro Gln Glu Gly Met Leu Ile
100 105 110

Leu Ala Ser Gly Ile Pro Ala Lys Ile Ile Lys Val Thr Asp Asp Thr
115 120 125

Val Thr Leu Asp Phe Asn His Glu Leu Ala Gly Lys Glu Leu Lys Phe
130 135 140

Thr Ile Lys Val Arg Asp Val Gln Pro Ala Glu Ser Glu
145 150 155

<210> 3
<211> 432
<212> PRT
<213> Escherichia coli

<400> 3

Met Gln Val Ser Val Glu Thr Thr Gln Gly Leu Gly Arg Arg Val Thr
1 5 10 15

Ile Thr Ile Ala Ala Asp Ser Ile Glu Thr Ala Val Lys Ser Glu Leu
20 25 30

Val Asn Val Ala Lys Lys Val Arg Ile Asp Gly Phe Arg Lys Gly Lys
35 40 45

Val Pro Met Asn Ile Val Ala Gln Arg Tyr Gly Ala Ser Val Arg Gln
50 55 60

Asp Val Leu Gly Asp Leu Met Ser Arg Asn Phe Ile Asp Ala Ile Ile
65 70 75 80

Lys Glu Lys Ile Asn Pro Ala Gly Ala Pro Thr Tyr Val Pro Gly Glu
85 90 95

Tyr Lys Leu Gly Glu Asp Phe Thr Tyr Ser Val Glu Phe Glu Val Tyr
100 105 110

Pro Glu Val Glu Leu Gln Gly Leu Glu Ala Ile Glu Val Glu Lys Pro
115 120 125

Ile Val Glu Val Thr Asp Ala Asp Val Asp Gly Met Leu Asp Thr Leu
130 135 140

Arg Lys Gln Gln Ala Thr Trp Lys Glu Lys Asp Gly Ala Val Glu Ala
145 150 155 160

Glu Asp Arg Val Thr Ile Asp Phe Thr Gly Ser Val Asp Gly Glu Glu
165 170 175

Phe Glu Gly Gly Lys Ala Ser Asp Phe Val Leu Ala Met Gly Gln Gly
180 185 190

Arg Met Ile Pro Gly Phe Glu Asp Gly Ile Lys Gly His Lys Ala Gly
195 200 205

Glu Glu Phe Thr Ile Asp Val Thr Phe Pro Glu Glu Tyr His Ala Glu
210 215 220

Asn Leu Lys Gly Lys Ala Ala Lys Phe Ala Ile Asn Leu Lys Lys Val
225 230 235 240

Glu Glu Arg Glu Leu Pro Glu Leu Thr Ala Glu Phe Ile Lys Arg Phe
245 250 255

Gly Val Glu Asp Gly Ser Val Glu Gly Leu Arg Ala Glu Val Arg Lys
260 265 270

Asn Met Glu Arg Glu Leu Lys Ser Ala Ile Arg Asn Arg Val Lys Ser
275 280 285

Gln Ala Ile Glu Gly Leu Val Lys Ala Asn Asp Ile Asp Val Pro Ala
290 295 300

Ala Leu Ile Asp Ser Glu Ile Asp Val Leu Arg Arg Gln Ala Ala Gln
305 310 315 320

Arg Phe Gly Gly Asn Glu Lys Gln Ala Leu Glu Leu Pro Arg Glu Leu
325 330 335

Phe Glu Glu Gln Ala Lys Arg Arg Val Val Val Gly Leu Leu Leu Gly
340 345 350

Glu Val Ile Arg Thr Asn Glu Leu Lys Ala Asp Glu Glu Arg Val Lys
 355 360 365

Gly Leu Ile Glu Glu Met Ala Ser Ala Tyr Glu Asp Pro Lys Glu Val
 370 375 380

Ile Glu Phe Tyr Ser Lys Asn Lys Glu Leu Met Asp Asn Met Arg Asn
 385 390 395 400

Val Ala Leu Glu Glu Gln Ala Val Glu Ala Val Leu Ala Lys Ala Lys
 405 410 415

Val Thr Glu Lys Glu Thr Thr Phe Asn Glu Leu Met Asn Gln Gln Ala
 420 425 430

<210> 4
 <211> 1299
 <212> DNA
 <213> Escherichia coli

<400> 4
 atgcaagttt cagttgaaac cactcaaggc cttggccgcc gtgtaacgat tactatcgct 60
 gctgacagca tcgagaccgc tgttaaaagc gagctggtca acgttgcgaa aaaagtacgt 120
 attgacggct tccgcaaagg caaagtgcc atgaatatcg ttgctcagcg ttatggcgcg 180
 tctgtacgcc aggacgttct ggggtgacctg atgagccgta acttcattga cgccatcatt 240
 aaagaaaaaa tcaatccggc tggcgcaccg acttatgttc cgggcgaata caagctgggt 300
 gaagacttca cttactctgt agagtttgaa gtttatccgg aagttgaact gcagggctctg 360
 gaagcgatcg aagttgaaaa accgatcggt gaagtgaccg acgctgacgt tgacggcatg 420
 ctggatactc tgcgtaaaca gcaggcgacc tggaaagaaa aagacggcgc tgttgaagca 480
 gaagaccgcg taaccatcga cttcaccggt tctgtagacg gcgaagagtt cgaaggcggt 540
 aaagcgtctg atttcgtact ggcgatgggc cagggtcgta tgatcccggg ctttgaagac 600
 ggtatcaaag gccacaaagc tggcgaagag ttcaccatcg acgtgacctt cccggaagaa 660
 taccacgcag aaaacctgaa aggtaaagca gcgaaattcg ctatcaacct gaagaaagtt 720
 gaagagcgtg aactgccgga actgactgca gaattcatca aacgtttcgg cgttgaagat 780
 ggttccgtag aaggtctgcg cgctgaagtg cgtaaaaaca tggagcgcg gctgaagagc 840
 gccatccgta accgcgttaa gtctcaggcg atcgaaaggtc tggtaaaagc taacgacatc 900
 gacgtaccgg ctgctgctgat cgacagcgaa atcgacgttc tgcgtcgcca ggctgcacag 960
 cgtttcggtg gcaacgaaaa acaagctctg gaactgccgc gcgaactgtt cgaagaacag 1020

gctaaacgcc gcgtagttgt tggcctgctg ctgggcgaag ttatccgcac caacgagctg 1080
aaagctgacg aagagcgcgt gaaaggcctg atcgaagaga tggcttctgc gtacgaagat 1140
ccgaaagaag ttatcgagtt ctacagcaaa aacaaagaac tgatggacaa catgcgcaat 1200
gttgctctgg aagaacaggc tgttgaagct gtactggcga aagcgaaagt gactgaaaaa 1260
gaaaccactt tcaacgagct gatgaaccag caggcgtaa 1299

<210> 5
<211> 270
<212> PRT
<213> Escherichia coli

<400> 5

Met Lys Ser Leu Phe Lys Val Thr Leu Leu Ala Thr Thr Met Ala Val
1 5 10 15

Ala Leu His Ala Pro Ile Thr Phe Ala Ala Glu Ala Ala Lys Pro Ala
20 25 30

Thr Ala Ala Asp Ser Lys Ala Ala Phe Lys Asn Asp Asp Gln Lys Ser
35 40 45

Ala Tyr Ala Leu Gly Ala Ser Leu Gly Arg Tyr Met Glu Asn Ser Leu
50 55 60

Lys Glu Gln Glu Lys Leu Gly Ile Lys Leu Asp Lys Asp Gln Leu Ile
65 70 75 80

Ala Gly Val Gln Asp Ala Phe Ala Asp Lys Ser Lys Leu Ser Asp Gln
85 90 95

Glu Ile Glu Gln Thr Leu Gln Ala Phe Glu Ala Arg Val Lys Ser Ser
100 105 110

Ala Gln Ala Lys Met Glu Lys Asp Ala Ala Asp Asn Glu Ala Lys Gly
115 120 125

Lys Glu Tyr Arg Glu Lys Phe Ala Lys Glu Lys Gly Val Lys Thr Ser
130 135 140

Ser Thr Gly Leu Val Tyr Gln Val Val Glu Ala Gly Lys Gly Glu Ala
145 150 155 160

Pro Lys Asp Ser Asp Thr Val Val Val Asn Tyr Lys Gly Thr Leu Ile
165 170 175

Asp Gly Lys Glu Phe Asp Asn Ser Tyr Thr Arg Gly Glu Pro Leu Ser
 180 185 190

Phe Arg Leu Asp Gly Val Ile Pro Gly Trp Thr Glu Gly Leu Lys Asn
 195 200 205

Ile Lys Lys Gly Gly Lys Ile Lys Leu Val Ile Pro Pro Glu Leu Ala
 210 215 220

Tyr Gly Lys Ala Gly Val Pro Gly Ile Pro Pro Asn Ser Thr Leu Val
 225 230 235 240

Phe Asp Val Glu Leu Leu Asp Val Lys Pro Ala Pro Lys Ala Asp Ala
 245 250 255

Lys Pro Glu Ala Asp Ala Lys Ala Ala Asp Ser Ala Lys Lys
 260 265 270

<210> 6
 <211> 813
 <212> DNA
 <213> Escherichia coli

<400> 6
 atgaaatcac tgttttaaagt aacgctgctg gcgaccacaa tggccgttgc cctgcatgca 60
 ccaatcactt ttgctgctga agctgcaaaa cctgctacaa ctgctgacag caaagcagcg 120
 ttcaaaaatg acgatcagaa atcagcttat gcaactgggtg cttecgctggg tcgttacatg 180
 gaaaactctc ttaaagaaca agaaaaactg ggcatacaac tggataaaga tcagctgatc 240
 gctggtgttc aggatgcatt tgctgataag agcaaacttt ccgaccaaga gatcgaacag 300
 actctgcaag cattcgaagc tcgctgaag tcttctgctc aggcgaagat ggaaaaagac 360
 gcggctgata acgaagcaaa aggtaaagag taccgcgaga aatttgccaa agagaaagggt 420
 gtgaaaacct cttccactgg tctggtttat caggtagtag aagccggtaa aggcgaagcc 480
 ccgaaagaca gcgatactgt ttagtgtaac taaaaggta cgctgatcga cggtaaagag 540
 ttcgacaact cttacacccg tgggtgaaccg ctctctttcc gtctggacgg tgttatcccg 600
 gggttgacag aaggctctgaa gaacatcaag aaaggcggtg agatcaaact ggttattcca 660
 ccgaaactgg cttacggcaa agcgggtgtt ccggggatcc caccgaattc taccctgggtg 720
 tttgacgtag agctgctgga tgtgaaacca gcgccgaagg ctgatgcaaa gccggaagct 780
 gatgcgaaag ccgcagactc tgctaaaaaa taa 813

<210> 7
 <211> 428
 <212> PRT
 <213> Escherichia coli

<400> 7

Met Lys Asn Trp Lys Thr Leu Leu Leu Gly Ile Ala Met Ile Ala Asn
 1 5 10 15

Thr Ser Phe Ala Ala Pro Gln Val Val Asp Lys Val Ala Ala Val Val
 20 25 30

Asn Asn Gly Val Val Leu Glu Ser Asp Val Asp Gly Leu Met Gln Ser
 35 40 45

Val Lys Leu Asn Ala Ala Gln Ala Arg Gln Gln Leu Pro Asp Asp Ala
 50 55 60

Thr Leu Arg His Gln Ile Met Glu Arg Leu Ile Met Asp Gln Ile Ile
 65 70 75 80

Leu Gln Met Gly Gln Lys Met Gly Val Lys Ile Ser Asp Glu Gln Leu
 85 90 95

Asp Gln Ala Ile Ala Asn Ile Ala Lys Gln Asn Asn Met Thr Leu Asp
 100 105 110

Gln Met Arg Ser Arg Leu Ala Tyr Asp Gly Leu Asn Tyr Asn Thr Tyr
 115 120 125

Arg Asn Gln Ile Arg Lys Glu Met Ile Ile Ser Glu Val Arg Asn Asn
 130 135 140

Glu Val Arg Arg Arg Ile Thr Ile Leu Pro Gln Glu Val Glu Ser Leu
 145 150 155 160

Ala Gln Gln Val Gly Asn Gln Asn Asp Ala Ser Thr Glu Leu Asn Leu
 165 170 175

Ser His Ile Leu Ile Pro Leu Pro Glu Asn Pro Thr Ser Asp Gln Val
 180 185 190

Asn Glu Ala Glu Ser Gln Ala Arg Ala Ile Val Asp Gln Ala Arg Asn
 195 200 205

Gly Ala Asp Phe Gly Lys Leu Ala Ile Ala His Ser Ala Asp Gln Gln
210 215 220

Ala Leu Asn Gly Gly Gln Met Gly Trp Gly Arg Ile Gln Glu Leu Pro
225 230 235 240

Gly Ile Phe Ala Gln Ala Leu Ser Thr Ala Lys Lys Gly Asp Ile Val
245 250 255

Gly Pro Ile Arg Ser Gly Val Gly Phe His Ile Leu Lys Val Asn Asp
260 265 270

Leu Arg Gly Glu Ser Lys Asn Ile Ser Val Thr Glu Val His Ala Arg
275 280 285

His Ile Leu Leu Lys Pro Ser Pro Ile Met Thr Asp Glu Gln Ala Arg
290 295 300

Val Lys Leu Glu Gln Ile Ala Ala Asp Ile Lys Ser Gly Lys Thr Thr
305 310 315 320

Phe Ala Ala Ala Ala Lys Glu Phe Ser Gln Asp Pro Gly Ser Ala Asn
325 330 335

Gln Gly Gly Asp Leu Gly Trp Ala Thr Pro Asp Ile Phe Asp Pro Ala
340 345 350

Phe Arg Asp Ala Leu Thr Arg Leu Asn Lys Gly Gln Met Ser Ala Pro
355 360 365

Val His Ser Ser Phe Gly Trp His Leu Ile Glu Leu Leu Asp Thr Arg
370 375 380

Asn Val Asp Lys Thr Asp Ala Ala Gln Lys Asp Arg Ala Tyr Arg Met
385 390 395 400

Leu Met Asn Arg Lys Phe Ser Glu Glu Ala Ala Ser Trp Met Gln Glu
405 410 415

Gln Arg Ala Ser Ala Tyr Val Lys Ile Leu Ser Asn
420 425

<210> 8
<211> 1287
<212> DNA
<213> Escherichia coli

```

<400> 8
atgaagaact ggaaaacgct gcttctcggt atcgccatga tcgcgaatac cagtttcgct      60
gccccccagg tagtcgataa agtcgcagcc gtcgtcaata acggcgctcgt gctggaaagc      120
gacgttgatg gattaatgca gtcggtaaaa ctgaacgctg ctcaggcaag gcagcaactt      180
cctgatgacg cgacgctgcg ccaccaaata atggaacggt tgatcatgga tcaaatacatc      240
ctgcagatgg ggcagaaaat gggagtgaaa atctccgatg agcagctgga tcaggcgatt      300
gctaacatcg cgaaacagaa caacatgacg ctggatcaga tgcgcagccg tctggcttac      360
gatggactga actacaacac ctatcgtaac cagatccgca aagagatgat tatctctgaa      420
gtgcgtaaca acgaggtgcg tcgtcgcata accatcctgc cgcaggaagt cgaatccctg      480
gcgcagcagg tgggtaacca aaacgacgcc agcactgagc tgaacctgag ccacatcctg      540
atcccgcctgc cggaiaaccc gacctctgat caggtgaacg aagcggaaag ccaggcgctgc      600
gccattgtcg atcaggcgcg taacggcgct gatttcggta agctggcgat tgctcattct      660
gccgaccagc aggcgctgaa cggcggccag atgggctggg gccgtattca ggagttgccc      720
gggatcttcg cccaggcatt aagcaccgcg aagaaaggcg acattgttgg cccgattcgt      780
tccggcgttg gcttccatat tctgaaagtt aacgacctgc gcggcgaaag caaaaatatc      840
tcggtgaccg aagttcatgc tcgccatatt ctgctgaaac cgtcgccgat catgactgac      900
gaacaggccc gtgtgaaact ggaacagatt gctgctgata tcaagagtgg taaaacgact      960
tttgctgccg cagcgaaaga gttctctcag gatccaggct ctgctaacca gggcgcgat      1020
ctcggtggtg ctacaccaga tattttcgat ccggccttcc gtgacgccct gactcgctg      1080
aaciaagggtc aaatgagtgc accggttcac tcttcattcg gctggcattt aatcgaactg      1140
ctggataccc gtaatgtcga taaaaccgac gctgcgcaga aagatcgtgc ataccgcatg      1200
ctgatgaacc gtaagttctc ggaagaagca gcaagctgga tgcaggaaca acgtgccagc      1260
gctacgttta aaatcctgag caactaa                                          1287

```

```

<210> 9
<211> 459
<212> PRT
<213> Homo sapiens

```

```

<400> 9
Met Thr Ala Glu Glu Met Lys Ala Thr Glu Ser Gly Ala Gln Ser Ala
1          5          10          15

```

```

Pro Leu Pro Met Glu Gly Val Asp Ile Ser Pro Lys Gln Asp Glu Gly
          20          25          30

```

Val Leu Lys Val Ile Lys Arg Glu Gly Thr Gly Thr Glu Met Pro Met
35 40 45

Ile Gly Asp Arg Val Phe Val His Tyr Thr Gly Trp Leu Leu Asp Gly
50 55 60

Thr Lys Phe Asp Ser Ser Leu Asp Arg Lys Asp Lys Phe Ser Phe Asp
65 70 75 80

Leu Gly Lys Gly Glu Val Ile Lys Ala Trp Asp Ile Ala Ile Ala Thr
85 90 95

Met Lys Val Gly Glu Val Cys His Ile Thr Cys Lys Pro Glu Tyr Ala
100 105 110

Tyr Gly Ser Ala Gly Ser Pro Pro Lys Ile Pro Pro Asn Ala Thr Leu
115 120 125

Val Phe Glu Val Glu Leu Phe Glu Phe Lys Gly Glu Asp Leu Thr Glu
130 135 140

Glu Glu Asp Gly Gly Ile Ile Arg Arg Ile Gln Thr Arg Gly Glu Gly
145 150 155 160

Tyr Ala Lys Pro Asn Glu Gly Ala Ile Val Glu Val Ala Leu Glu Gly
165 170 175

Tyr Tyr Lys Asp Lys Leu Phe Asp Gln Arg Glu Leu Arg Phe Glu Ile
180 185 190

Gly Glu Gly Glu Asn Leu Asp Leu Pro Tyr Gly Leu Glu Arg Ala Ile
195 200 205

Gln Arg Met Glu Lys Gly Glu His Ser Ile Val Tyr Leu Lys Pro Ser
210 215 220

Tyr Ala Phe Gly Ser Val Gly Lys Glu Lys Phe Gln Ile Pro Pro Asn
225 230 235 240

Ala Glu Leu Lys Tyr Glu Leu His Leu Lys Ser Phe Glu Lys Ala Lys
245 250 255

Glu Ser Trp Glu Met Asn Ser Glu Glu Lys Leu Glu Gln Ser Thr Ile
260 265 270

Val Lys Glu Arg Gly Thr Val Tyr Phe Lys Glu Gly Lys Tyr Lys Gln
275 280 285

Ala Leu Leu Gln Tyr Lys Lys Ile Val Ser Trp Leu Glu Tyr Glu Ser
290 295 300

Ser Phe Ser Asn Glu Glu Ala Gln Lys Ala Gln Ala Leu Arg Leu Ala
305 310 315 320

Ser His Leu Asn Leu Ala Met Cys His Leu Lys Leu Gln Ala Phe Ser
325 330 335

Ala Ala Ile Glu Ser Cys Asn Lys Ala Leu Glu Leu Asp Ser Asn Asn
340 345 350

Glu Lys Gly Leu Phe Arg Arg Gly Glu Ala His Leu Ala Val Asn Asp
355 360 365

Phe Glu Leu Ala Arg Ala Asp Phe Gln Lys Val Leu Gln Leu Tyr Pro
370 375 380

Asn Asn Lys Ala Ala Lys Thr Gln Leu Ala Val Cys Gln Gln Arg Ile
385 390 395 400

Arg Arg Gln Leu Ala Arg Glu Lys Lys Leu Tyr Ala Asn Met Phe Glu
405 410 415

Arg Leu Ala Glu Glu Glu Asn Lys Ala Lys Ala Glu Ala Ser Ser Gly
420 425 430

Asp His Pro Thr Asp Thr Glu Met Lys Glu Glu Gln Lys Ser Asn Thr
435 440 445

Ala Gly Ser Gln Ser Gln Val Glu Thr Glu Ala
450 455

<210> 10
<211> 1380
<212> DNA
<213> Homo sapiens

<400> 10
atgacagccg aggagatgaa ggcgaccgag agcggggcgc agtcggcgcc gctgcccattg 60
gagggagtg acatcagccc caaacaggac gaaggcgtgc tgaaggatcat caagagagag 120

```

ggcacaggta cagagatgcc catgattggg gaccgagtct ttgtccacta cactggctgg 180
ctattagatg gcacaaagtt tgactccagt ctggatcgca aggacaaatt ctcctttgac 240
ctgggaaaag gggaggtcat caaggcttgg gacattgcca tagccaccat gaagggtggg 300
gaggtgtgcc acatcacctg caaaccagaa tatgcctacg gttcagcagg cagtccctcca 360
aagattcccc ccaatgccac gcttgtatth gaggtggagt tgtttgagtt taaggagaaa 420
gatctgacgg aagaggaaga tggcggaatc attcgagaaa tacagactcg cgggtgaaggc 480
tatgctaagc ccaatgaggg tgctatcgtg gaggttgcac tggaagggtg ctacaaggac 540
aagctctttg accagcggga gctccgctth gagattggcg agggggagaa cctggatctg 600
ccttatggtc tggagagggc cattcagcgc atggagaaa gagaacattc catcgtgtac 660
ctcaagccca gctatgctth tggcagtgtt gggaaggaaa agttccaaat cccaccaaat 720
gctgagctga aatatgaatt acacctcaag agttttgaaa aggccaagga gtcttgggag 780
atgaattcag aagagaagct ggaacagagc accatagtga aagagcgggg cactgtgtac 840
ttcaaggaag gtaaatacaa gcaagctth ctacagtata agaagatcgt gtcttggctg 900
gaatatgagt ctagtttttc caatgaggaa gcacagaaa cacaggccct tcgactggcc 960
tctcacctca acctggccat gtgtcatctg aaactacagg ccttctctgc tgccattgaa 1020
agctgtaaca aggccctaga actggacagc aacaacgaga agggcctctt ccgccgggga 1080
gaggcccacc tggccgtgaa tgactttgaa ctggcacggg ctgatttcca gaaggctctg 1140
cagctctacc ccaacaacaa agccgccaag acccagctgg ctgtgtgcca gcagcggatc 1200
cgaaggcagc ttgcccggga gaagaagctc tatgccaata tgtttgagag gctggctgag 1260
gaggagaaca aggccaaggc agaggcttcc tcaggagacc atccactga cacagagatg 1320
aaggaggagc agaagagcaa cacggcaggg agccagtctc aggtggagac agaagcatag 1380

```

```

<210> 11
<211> 370
<212> PRT
<213> Homo sapiens

```

```

<400> 11

```

```

Met Ser His Pro Ser Pro Gln Ala Lys Pro Ser Asn Pro Ser Asn Pro
1          5          10          15

```

```

Arg Val Phe Phe Asp Val Asp Ile Gly Gly Glu Arg Val Gly Arg Ile
          20          25          30

```

```

Val Leu Glu Leu Phe Ala Asp Ile Val Pro Lys Thr Ala Glu Asn Phe
          35          40          45

```

Arg Ala Leu Cys Thr Gly Glu Lys Gly Ile Gly His Thr Thr Gly Lys
50 55 60

Pro Leu His Phe Lys Gly Cys Pro Phe His Arg Ile Ile Lys Lys Phe
65 70 75 80

Met Ile Gln Gly Gly Asp Phe Ser Asn Gln Asn Gly Thr Gly Gly Glu
85 90 95

Ser Ile Tyr Gly Glu Lys Phe Glu Asp Glu Asn Phe His Tyr Lys His
100 105 110

Asp Arg Glu Gly Leu Leu Ser Met Ala Asn Ala Gly Arg Asn Thr Asn
115 120 125

Gly Ser Gln Phe Phe Ile Thr Thr Val Pro Thr Pro His Leu Asp Gly
130 135 140

Lys His Val Val Phe Gly Gln Val Ile Lys Gly Ile Gly Val Ala Arg
145 150 155 160

Ile Leu Glu Asn Val Glu Val Lys Gly Glu Lys Pro Ala Lys Leu Cys
165 170 175

Val Ile Ala Glu Cys Gly Glu Leu Lys Glu Gly Asp Asp Gly Gly Ile
180 185 190

Phe Pro Lys Asp Gly Ser Gly Asp Ser His Pro Asp Phe Pro Glu Asp
195 200 205

Ala Asp Ile Asp Leu Lys Asp Val Asp Lys Ile Leu Leu Ile Thr Glu
210 215 220

Asp Leu Lys Asn Ile Gly Asn Thr Phe Phe Lys Ser Gln Asn Trp Glu
225 230 235 240

Met Ala Ile Lys Lys Tyr Ala Glu Val Leu Arg Tyr Val Asp Ser Ser
245 250 255

Lys Ala Val Ile Glu Thr Ala Asp Arg Ala Lys Leu Gln Pro Ile Ala
260 265 270

Leu Ser Cys Val Leu Asn Ile Gly Ala Cys Lys Leu Lys Met Ser Asn
275 280 285

Trp Gln Gly Ala Ile Asp Ser Cys Leu Glu Ala Leu Glu Leu Asp Pro
 290 295 300

Ser Asn Thr Lys Ala Leu Tyr Arg Arg Ala Gln Gly Trp Gln Gly Leu
 305 310 315 320

Lys Glu Tyr Asp Gln Ala Leu Ala Asp Leu Lys Lys Ala Gln Gly Ile
 325 330 335

Ala Pro Glu Asp Lys Ala Ile Gln Ala Glu Leu Leu Lys Val Lys Gln
 340 345 350

Lys Ile Lys Ala Gln Lys Asp Lys Glu Lys Ala Val Tyr Ala Lys Met
 355 360 365

Phe Ala
 370

<210> 12
 <211> 1113
 <212> DNA
 <213> Homo sapiens

<400> 12
 atgtcgcacc cgtcccccca agccaagccc tccaacccca gtaaccctcg agtcttcttt 60
 gacgtggaca tcggagggga gcgagttggt cgaattgtct tagaattggt tgcagatata 120
 gtacccaaaa ctgcggaaaa ttttcgtgca ctgtgtacag gagaaaaagg cattggacac 180
 acgactggga aacctctcca tttcaaagga tgcccttttc atcgaattat taagaaattt 240
 atgattcagg gtggagactt ctcaaatacag aatgggacag gtggagaaaag tatttatggt 300
 gaaaaatttg aagatgaaaa ttccattac aagcatgata gggagggttt actgagcatg 360
 gcaaatgcag gccgcaacac aaacggttct cagtttttta tcacaacagt tccaactcct 420
 ctttggatg ggaaacatgt ggtgtttggc caagtaatta aaggaatagg agtggcaagg 480
 atattggaaa atgtggaagt gaaaggtaga aaacctgcta aattgtgcgt tattgcagaa 540
 tgtggagaat tgaaggaagg agatgacggg ggaatattcc caaaagatgg ctctggcgac 600
 agtcatccag atttcctga ggatgcggat atagatttaa aagatgtaga taaaatttta 660
 ttaataacag aagacttaaa aaacattgga aatacttttt tcaaatccca gaactgggag 720
 atggctatta aaaaatatgc agaagtttta agatacgtgg acagttcaaa ggctgttatt 780
 gagacagcag atagagccaa gctgcaacct atagctttta gctgtgtact gaatattggt 840

gcttgtaaac tgaagatgtc aaattggcag ggagcaattg acagttgttt agaggctctt 900
gaactagacc catcaaatac caaagcattg taccgcagag ctcaaggatg gcaaggatta 960
aaagaatatg atcaagcatt ggctgatctt aagaaagctc aggggatagc accagaagat 1020
aaagctatcc aggcagaatt gctgaaagtc aaacaaaaga taaaggcaca gaaagataaa 1080
gagaaggcag tatatgcaaa aatgtttgct tag 1113

<210> 13
<211> 422
<212> PRT
<213> Homo sapiens

<400> 13

Met Asp Val Leu Ser Pro Gly Gln Gly Asn Asn Thr Thr Ser Pro Pro
1 5 10 15

Ala Pro Phe Glu Thr Gly Gly Asn Thr Thr Gly Ile Ser Asp Val Thr
20 25 30

Val Ser Tyr Gln Val Ile Thr Ser Leu Leu Leu Gly Thr Leu Ile Phe
35 40 45

Cys Ala Val Leu Gly Asn Ala Cys Val Val Ala Ala Ile Ala Leu Glu
50 55 60

Arg Ser Leu Gln Asn Val Ala Asn Tyr Leu Ile Gly Ser Leu Ala Val
65 70 75 80

Thr Asp Leu Met Val Ser Val Leu Val Leu Pro Met Ala Ala Leu Tyr
85 90 95

Gln Val Leu Asn Lys Trp Thr Leu Gly Gln Val Thr Cys Asp Leu Phe
100 105 110

Ile Ala Leu Asp Val Leu Cys Cys Thr Ser Ser Ile Leu His Leu Cys
115 120 125

Ala Ile Ala Leu Asp Arg Tyr Trp Ala Ile Thr Asp Pro Ile Asp Tyr
130 135 140

Val Asn Lys Arg Thr Pro Arg Arg Ala Ala Ala Leu Ile Ser Leu Thr
145 150 155 160

Trp Leu Ile Gly Phe Leu Ile Ser Ile Pro Pro Met Leu Gly Trp Arg
165 170 175

Thr Pro Glu Asp Arg Ser Asp Pro Asp Ala Cys Thr Ile Ser Lys Asp
180 185 190

His Gly Tyr Thr Ile Tyr Ser Thr Phe Gly Ala Phe Tyr Ile Pro Leu
195 200 205

Leu Leu Met Leu Val Leu Tyr Gly Arg Ile Phe Arg Ala Ala Arg Phe
210 215 220

Arg Ile Arg Lys Thr Val Lys Lys Val Glu Lys Thr Gly Ala Asp Thr
225 230 235 240

Arg His Gly Ala Ser Pro Ala Pro Gln Pro Lys Lys Ser Val Asn Gly
245 250 255

Glu Ser Gly Ser Arg Asn Trp Arg Leu Gly Val Glu Ser Lys Ala Gly
260 265 270

Gly Ala Leu Cys Ala Asn Gly Ala Val Arg Gln Gly Asp Asp Gly Ala
275 280 285

Ala Leu Glu Val Ile Glu Val His Arg Val Gly Asn Ser Lys Glu His
290 295 300

Leu Pro Leu Pro Ser Glu Ala Gly Pro Thr Pro Cys Ala Pro Ala Ser
305 310 315 320

Phe Glu Arg Lys Asn Glu Arg Asn Ala Glu Ala Lys Arg Lys Met Ala
325 330 335

Leu Ala Arg Glu Arg Lys Thr Val Lys Thr Leu Gly Ile Ile Met Gly
340 345 350

Thr Phe Ile Leu Cys Trp Leu Pro Phe Phe Ile Val Ala Leu Val Leu
355 360 365

Pro Phe Cys Glu Ser Ser Cys His Met Pro Thr Leu Leu Gly Ala Ile
370 375 380

Ile Asn Trp Leu Gly Tyr Ser Asn Ser Leu Leu Asn Pro Val Ile Tyr
385 390 395 400

Ala Tyr Phe Asn Lys Asp Phe Gln Asn Ala Phe Lys Lys Ile Ile Lys
405 410 415

Cys Lys Phe Cys Arg Gln
420

<210> 14
<211> 1266
<212> DNA
<213> Homo sapiens

<400> 14
atggatgtgc tcagccctgg tcagggcaac aacaccacat caccaccggc tccctttgag 60
accggcggca aactacttgg tatctccgac gtgaccgtca gctaccaagt gatcacctct 120
ctgctgctgg gcacgctcat cttctgcgcg gtgctgggca atgcgtgcgt ggtggctgcc 180
atgccttgg agcgctccct gcagaacgtg gccattatc ttattggctc ttggcggtc 240
accgacctca tgggtgctgg gttggtgctg cccatggccg cgctgtatca ggtgctcaac 300
aagtggacac tgggccaggt aacctgcgac ctgttcatcg cctcgacgt gctgtgctgc 360
acctcatcca tcttgacact gtgcgccatc gcgctggaca ggtactgggc catcacggac 420
cccatcgact acgtgaacaa gaggacgcc cggcgcgcgc ctgcgctcat ctgcgtcact 480
tggtttattg gcttccctcat ctctatcccg cccatgctgg gctggcgcac cccggaagac 540
cgctcggacc ccgacgcatg caccattagc aaggatcatg gctacactat ctattccacc 600
tttggagctt tctacatccc gctgctgctc atgctggttc tctatgggcg catattccga 660
gctgcgcgct tccgcatccg caagacggtc aaaaagggtg agaagaccgg agcggacacc 720
cgccatggag catctccgc cccgcagccc aagaagagtg tgaatggaga gtcggggagc 780
aggaactgga ggctgggcgt ggagagcaag gctgggggtg ctctgtgcgc caatggcgcg 840
gtgaggcaag gtgacgatgg cgccgcctg gaggtgatcg aggtgcaccg agtgggcaac 900
tccaaagagc acttgccctc gccagcgag gctgggtcta ccccttgtgc cccgcctct 960
ttcgagagga aaaatgagcg caacgccgag gcgaagcgca agatggccct ggcccgagag 1020
aggaagacag tgaagacgct gggcatcatc atgggcacct tcctcctctg ctggctgccc 1080
ttcttcatcg tggctcttgt tctgcccttc tgcgagagca gctgccacat gccaccctg 1140
ttgggcgcca taatcaattg gctgggtac tccaactctc tgcttaacct cgtcatttac 1200
gcatacttca acaaggactt tcaaacgcg tttaagaaga tcattaagtg taagttctgc 1260
cgccag 1266

<210> 15
<211> 40
<212> DNA

<213> Artificial Sequence

<220>

<223> linker

<400> 15

ggactagtct ggttccgcgt ggatcccata tggaatccgg

40

<210> 16

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> translation of linker

<400> 16

Thr Ser Leu Val Pro Arg Gly Ser His Met Glu Phe
1 5 10

<210> 17

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 17

ggccatggga aaagttgaag ctggtgat

28

<210> 18

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 18

ccactagtag cttctgagtc ctcttc

26

<210> 19

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 19

ggccatgggc caagtttcag ttgaaacc

28

<210> 20

<211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 20
 ccactagtcg cctgctgggt catcagct 28

<210> 21
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 21
 ggccatgggc acagccgagg agatgaa 27

<210> 22
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 22
 ccactagttg cttctgtctc cacctga 27

<210> 23
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 23
 ggccatgggc tcgcacccgt cccc 24

<210> 24
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 24
 ccactagtag caaacatttt tgcatatact g 31

<210> 25

<211> 32
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 25
 ggccatgggc aaatcactgt ttaaagtaac gc 32

<210> 26
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCr primer

 <400> 26
 ccactagttt ttttagcaga gtctgcggc 29

<210> 27
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 27
 ggccatgggc aagaactgga aaacgctg 28

<210> 28
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 28
 ccactagtgt tgctcaggat tttaacgta 29

<210> 29
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer

 <400> 29
 atcatatgaa atacctattg cctacg 26

<210> 30

<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 30
atgcggccgc ctattactcc agcttggtcc etc

33